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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/054,409	11/13/2001	Vladimir Nikitin	FIS920010238US1	5123

32074 7590 07/23/2003

INTERNATIONAL BUSINESS MACHINES CORPORATION
DEPT. 18G
BLDG. 300-482
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EXAMINER

GLENN, KIMBERLY E

ART UNIT PAPER NUMBER

2817

DATE MAILED: 07/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/054,409

Applicant(s)

NIKITIN, VLADIMIR

Examiner

Kimberly E Glenn

Art Unit

2817

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,6-9 and 12-17 is/are pending in the application.
- 4a) Of the above claim(s) 5,10 and 11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,9 and 12-17 is/are rejected.
- 7) ☒ Claim(s) 6-8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al US Patent 6,144,545(of record) in view of Ma US Patent 6,531,668.

The primary reference, Lee et al teaches MEMS connected between a voltage supply system (57), the MEMS inherently having a mechanical resonant frequency and said voltage supply system having the capability for supplying a voltage with a frequency corresponding to the mechanical resonate frequency. The MEMS including a movable part (53) having the mechanical resonant frequency. The MEMS including a first electrode (55) spaced from a second electrode (54), a further including a movable part 52 including the second electrode. The voltage supply system is connected to the first electrode (55) and the second electrode (54). The voltage supply system is connected to the second electrode through the movable part (52). The MEMS is a cantilever or bridge type. (See figures 3 and 5) In figure 3 the movable electrode (33) is connected at one end to a spring (32), which is connected to support portion 31. A DC voltage is also supplied to the movable part. The method steps to the above apparatus are inherent. Lee et al states in column 4 lines 57-60, that the power supply applies a voltage in which in AC voltage of $20 \sin(2\pi f_r t)$ where f_r is the resonant frequency of the actuator.

Thus Lee et al is shown to teach all the limitations of the claim with the exception of voltage supply system including a control circuit 912 connected to the a voltage supply.

Ma shows that it is well known and desirable in the art for a voltage supply system to include a control circuit. (Figure 9 and column 8 lines 17-63)

One skilled in the art at the time of the invention would have found it obvious to provide the voltage supply system of Lee et al with a control circuit. The motivation /suggestion for this modification would be to provide a means for controlling the voltage supplied to the MEMS.

Claims 9 and 12-16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al US Patent 6,144,545 (of record) in view of Knieser et al US Patent 6,583,374.

The primary reference, Lee et al teach a MEMS connected between a voltage supply system (57), the MEMS inherently having a mechanical resonant frequency and said voltage supply system having the capability for supplying a voltage with a frequency corresponding to the mechanical resonate frequency. The MEMS including a movable part (53) having the mechanical resonant frequency. The MEMS including a first electrode (55) spaced from a second electrode (54), a further including a movable part 52 including the second electrode. The voltage supply system is connected to the first electrode (55) and the second electrode (54). The voltage supply system is connected to the second electrode through the movable part (52). The MEMS is a cantilever or bridge type. (See figures 3 and 5) In figure 3 the movable electrode (33) is connected at one end to a spring (32), which is connected to support portion 31. A DC voltage is also supplied to the movable part. The method steps to the above apparatus are inherent. Lee et al states in column 4 lines 57-60, that the power supply applies a voltage in which in AC voltage of $20 \sin(2\pi f t)$ where f_r is the resonant frequency of the actuator.

Thus, Lee et al is shown to teach all the limitations of the claims with the exceptions of the AC voltage having a frequency in the range of 1 KHz and step of detecting the motion of the movable part and the varying the AC voltage in responsive to this detection.

Knieser et al show that it well known and desirable in the art to have a sensor (18 74) for detecting motion in a movable part. Knieser et al states that the sensor may be used to provide feedback to a device producing the electrical input signal. (Figures 1 and 7, column 5 line 36 through column 7 line 16 and column 10 lines 19-47)

One skilled in the art at, the time of the invention, would have found it obvious to provide the circuit of Lee et al with a sensor for detecting motion in a movable part as taught in Knieser et al. The motivation for this modification would be to ensure greater reliability in the transmission of signals. (Column 10 lines 19-25)

It would have been obvious to one having ordinary skill in the art, at the time of the invention, to have the AC voltage having a frequency in the range of 1 KHz, since it has been held that where the general condition of the claims are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art.

Response to Arguments

Applicant's arguments with respect to claims 1-4, 9, 10, 12-16 have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

Claims 6-8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

With regards to claim 6, the prior art of record does not disclose or fairly teach a voltage supply system comprising a logic gate, a first comparator, a differentiator and a capacitor detector.

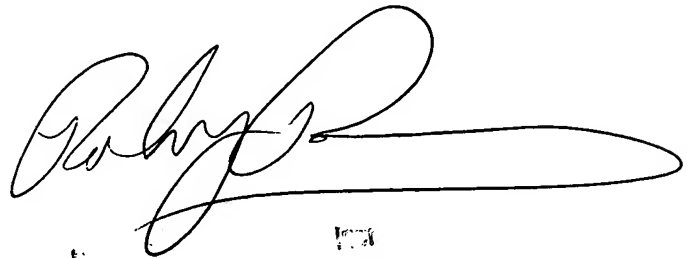
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly E Glenn whose telephone number is (703) 306-5942. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (703) 308-4909. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Kimberly E Glenn
Examiner
Art Unit 2817

keg
July 16, 2003

A handwritten signature in black ink, appearing to read 'Kimberly E Glenn', with a long horizontal flourish extending to the right.